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Fecal-indicator bacteria in Anchorage streams

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Urban Gradient Study

- Sites selected along a gradient of development
- Five major drainages in Anchorage represented
- Extremes of gradient represented by NAWQA fixed sites

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Study questions

- Do concentrations vary seasonally?
- Are concentrations different in areas with sewer and septic systems?
- Do concentrations relate to urban gradient?

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Study design

- **Seasonal**
  - Winter low flow
  - Snowmelt peak flow
  - Summer low flow
- **Sewer vs septic**
  - Chester & Campbell vs Rabbit & Little Rabbit
- **Urban gradient**—low, medium, high density

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Fecal-indicator bacteria groups

- **Fecal coliform**

  Alaska standards (100 col/100 mL)

- ***E. coli***

  EPA guideline (126 col/100 mL)

- **Enterococci**

  EPA guideline (33 col/100 mL)

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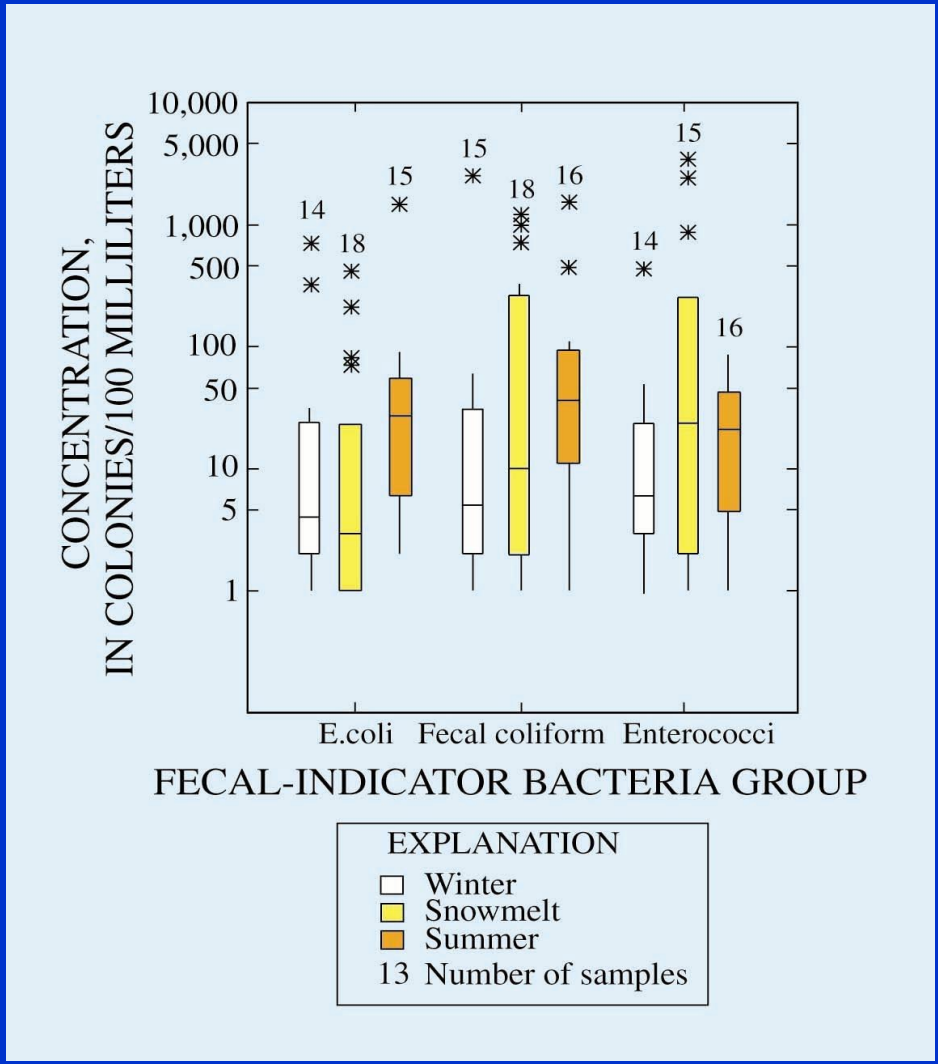
Seasonal Sampling



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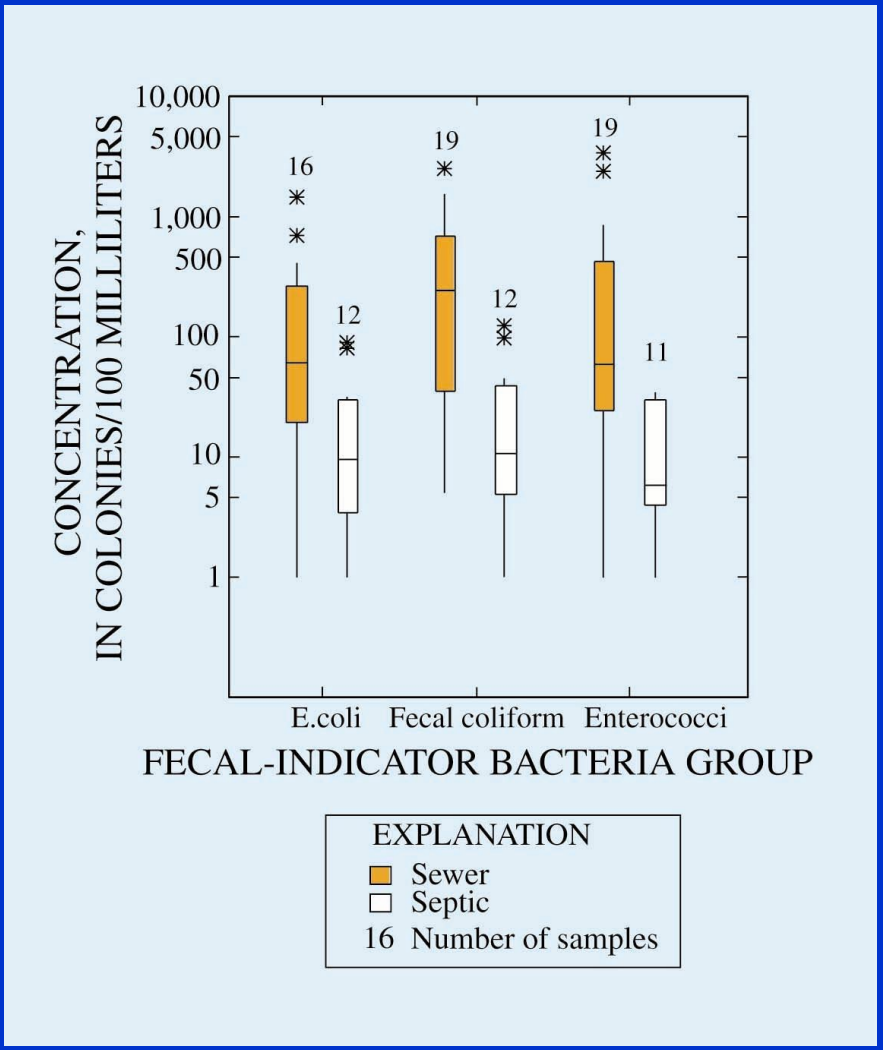
Sewer System vs Septic System



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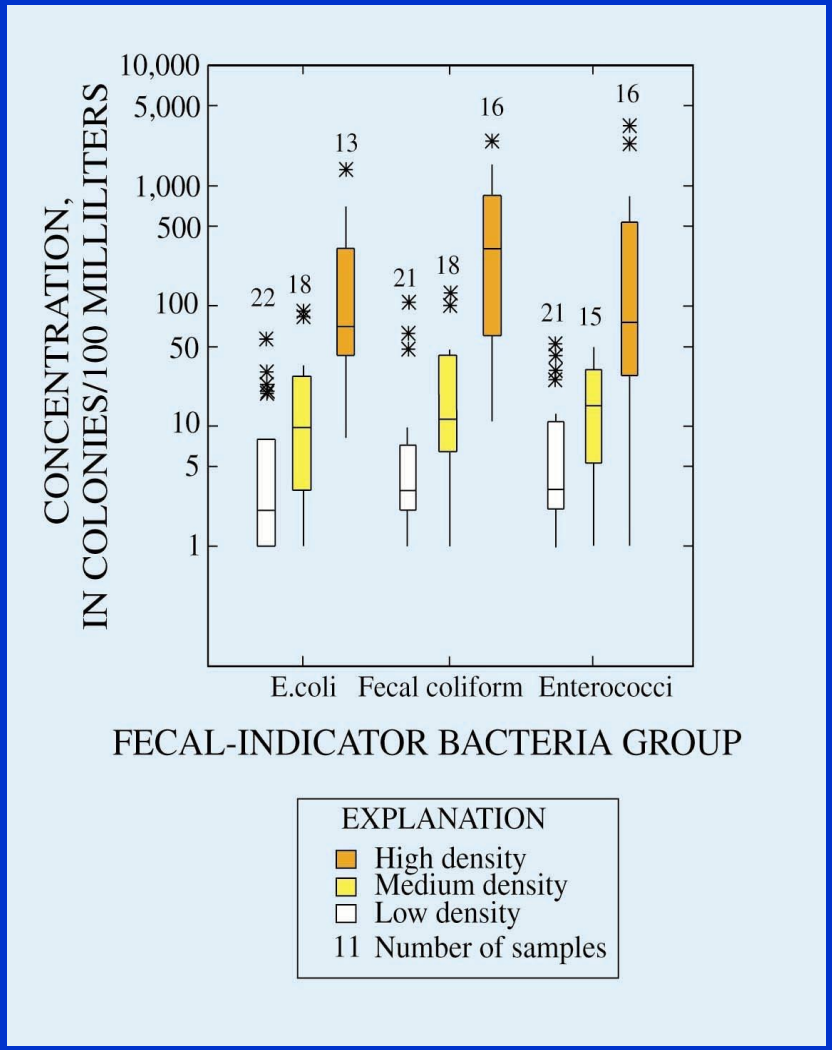
Population Density



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Short-term variability

- Chester Creek sampled four times in two days
- Triplicate samples collected each time
- Fecal coliform from 60 to 4,000
- *E. coli* from 70 to 2600
- Enterococci from 200 to 1300

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Summary

- Seasonal differences not apparent
- High population density = sewer system
- Medium population density = septic system
- Chester Creek consistently high concentrations in urbanized areas

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Implications to water quality

- Potentially frequent violations of standards
- Frequent sampling needed to establish status of water quality
- *E. coli* and enterococci more appropriate for standard

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